DIGITAL DIGEST

Vol. 6 No. 5 *Devoted to Amateur Radio Digital Communications & Technology* Sep/Oct, 1993

In This Issue . . .

The DIGIPEATER
features news and information from a realm of sources on ham radio, computers, software and digital communications...

BITS & BYTES
Wayne Renardson, NZ4W interviews Jay, WS7I and Betsy Townsend, WV7Y after a recent digital DXpedition to HC8 land...

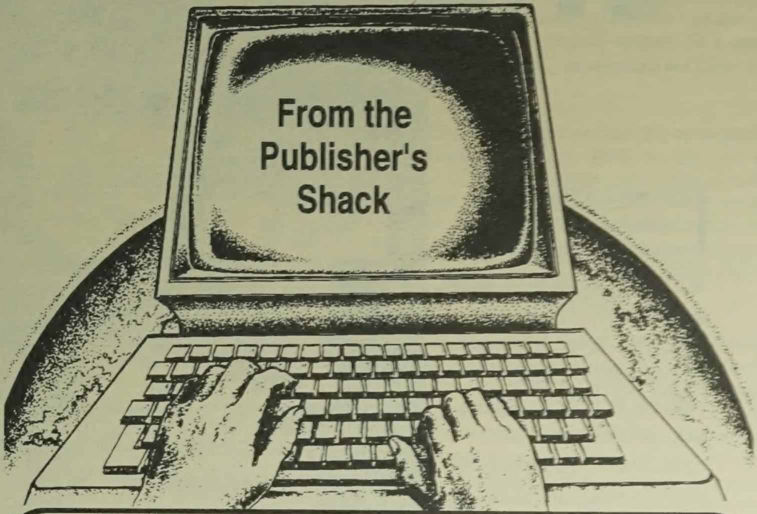
DIGITAL TV
Mike Stone, WB0QCD relates some of the latest "goings-on" in the realm of amateur TV and departs from the usual to review TRACKER -- spreadsheet software which he has developed...

SOFTWARE
Wayne Renardson, NZ4W reviews QEdit, a versatile text editor...

Plus info on:

- *New Products*
- *Choosing a Multi-Mode TNC*
- *Landline BBSs*

& more!



As our workaday lives seem to require us to be diligent in doing more than one task at once I find myself using (and appreciating) computer memory management programs. Two I am familiar with and use are Microsoft Windows and QEMM. Productivity is the name of the game in the 90's and anything that contributes to the bottom line in costs and/or efficiency is an appreciated asset.

Spending much of my working life in front of a monitor and keyboard, on diverse projects ranging from accounting, writing, graphic design and electronic publishing, the ability to share tasks simultaneously is a big advantage in getting things done.

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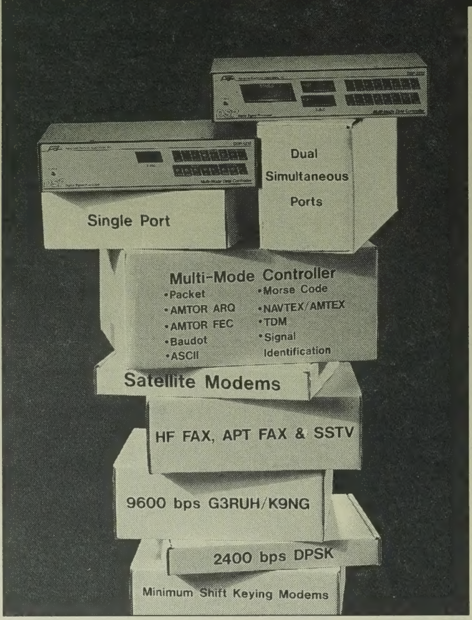

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Developed by AEA — with over 10 years of multi-mode controller development experience — the DSP-2232/1232 are the most advanced and versatile controllers available anywhere. They give you the capability to control all legal Amateur digital modes popular on both HF and VHF. New modems only require new software which can be installed with an EPROM chip, or downloaded from a telephone BBS binary file into the DSP's RAM. You won't need to replace your DSP-2232 or DSP-1232 as no new hardware or modifications will be needed as new modes become available.

Whatever you've thought about doing in Amatuer radio, it's here in the DSP-2232 /1232. All PK-232 MBX modems (Packet, AMTOR, etc.). All satellite modems (PSK, 4800 bps PACSAT, G3RUH 9600 bps, U022 equalized, 400 bps OSCAR-13). Analog modems for HF FAX, FAX APT, and SSTV. 9600 bps K9NG/G3RUH for terrestrial and satellite use. Each also offers internal RAM for up-loading modems, up to 36 simultaneous packet connections, EPROM up to 2 Mbits, software selectable radio ports, Mailbox accessible through both ports, dedicated printer port, RTTY digital noise gate, ARQ tolerance command, etc.

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TECHNOLOGY UPDATE

- CD-ROM Electronic versions of magazines are just around the corner! Time magazine will make its full text available to America Online subscribers.
[Advertising Age]

- IBM has a new "800" mailorder number. It is 1-800-IBM-CALL. They will even use it to sell large computers and give information - not just to market smaller PCs. IBM also has a brand new marketing team who are going full steam ahead after the higher profitable mail order and direct mail response business. A slimmer, reduced sales force IBM must now depend less on field reps servicing accounts. *[Advertising Age]*

- The Washington Post has developed a prototype electronic newspaper that could be transmitted through PCS (the new digital wireless communication service.) By touching a picture or headline, a reader could receive additional information in any form: video, sound or conventional text.
[Broadcasting and Cable. Sep 27, 1993]

- Anti-trust lawyer Reed Hundt, 45, the new FCC Chairman nominated by President Clinton appears headed for a speedy Senate confirmation. The cable industry is already wary of Hundt because of his close personal ties to Al Gore. who recommended Hundt for the FCC job. During his years in Congress, Gore, too. was hostile to cable.

Bill and Hillary Clinton graduated a class ahead of Hundt at Yale Law School. Hundt will take a considerable pay cut when he moves into FCC headquarters. According to the financial disclosure, he earned about $430,000 a year from his Latham & Watkins telecommunications law practice. An FCC Chairman earns $123,100 a year.
[Broadcasting and Cable, Aug 30 & Sep 27, 1993]

- Texas Instruments has a new silicon DMD chip, just a bit larger than 1/3-inch square, that has more than 400,000 tiny imbedded mirrors. Each mirror is only 17 millionths of an inch on a side. The mirrors can be directed to reflect light (and images) onto a projection screen. The quality of the picture is said to be superior to that of cathode ray and liquid crystal displays.

The digital micromirror device (DMD) system provides excellent resolution, brightness, contrast and color fidelity. The tiny mirrors create a flickerfree picture and produce less visual noise, which shows up as static or picture dropouts, than do traditional TV monitors. A single chip can create a full NTSC TV picture. It may take as many as three to create a high definition television image. The mirrors on the chip. each corresponding to a single pixel of the picture, reflect light through a projection lens onto a 60-inch projection screen 12 feet away. *[Broadcasting and Cable, Aug 16, 1993]*

- Remember the lawsuit filed by a Florida cellular telephone user who said it caused his wife to die of brain cancer? A circuit judge has thrown out the health hazards suit against the cellular phone manufacturer saying he lacks authority. "The Federal Communications Commission and Food and Drug Administration have primary jurisdiction over the issues raised in this case."
[Routers News Service]

- FCC to operate cost free? The Commission collects "Licensing Fees" on most of the applications it processes. (Amateur Radio is exempt.) This raises about $45 million a year. Add another $82 million in new "User Fees" and the FCC will come close to covering its $130 annual budget for fiscal 1994. It doesn't go to the FCC, however. At least, not yet. "If you take it out of the Treasury, you increase the deficit."
[Broadcasting and Cable, Aug 16, 1993]

- We understand that the FCC will name an AM Stereo Standard next week and that it will be Motorola's C-Quam system. We were also told that the new standard might be "circulated" rather than acted upon at a full Commission meeting.

- FM Digital Broadcasting may not see the light of day. The biggest unknown is multipath interference. FM signals can reflect off many surfaces, causing severe interference. There is no test data on how a digital signal survives in such an environment.. For AM stations, the biggest unknown is how well a multi-tower directional antenna system will transmit a digital signal. Broadcasters will not invest large sums of money unless it's a sure fire investment. *[Broadcasting and Cable. Sop 6, 1993]*

- The FCC may overhaul the emergency broadcast system (EBS) by the end of the year. Two systems are being considered. (1) An in-band system which would use an audible tone, as does the current system and (2) an out-of-band system which would use an inaudible tone to activate warning devices.

Either way, the powerful new EBS would be able to turn on receivers and automatically tune them to emergency warnings, activate alarm devices built into familiar home equipment (such as smoke detectors) and target individual areas - and even individual persons - for messages. This way, people will only receive the alerts they need. The new EBS system will also be activated by cable operators. [Broadcasting and Cable, Sop 20, 1993]

- Computer Bulletin Boards are moving out of the basement and into the living room as the technology emerges to send such services via the television rather than the personal computer. For-profit boards are forming rapidly, much like newsletters proliferated with the advent of desktop publishing.

(cont'd on page 18)

Is It Time To Renew Your Subscription?

Be sure to check your mailing label for your subscription's expiration date. Expiration is indicated by the digits to the right of your name by YEAR-ISSUE#. Issues are numbered 1 thru 6 and relates to the publication as follows:

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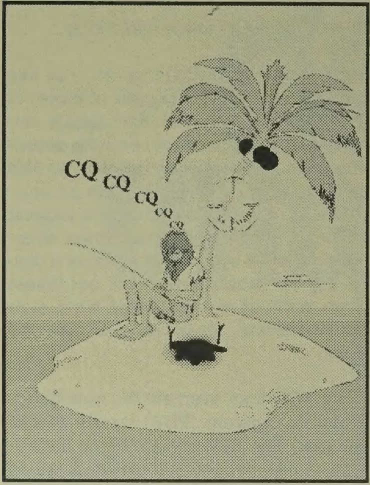
BITS & BYTES

by Wayne Renardson, NZ4W

1113 Woodvale Dr. • Nashville, TN 37204


CQ CQ CQ CQ CQ

The thrill of operating digital modes from an exotic location appeals to the wanderlust in most DXers.

The magic of both sending and receiving signals from around the world enticed many amateur radio operators into the hobby. And for some, the more exotic the source or location, the sweeter the signal seems to sound.

I first met Jay, WS7I, and Betsy Townsend, WV7Y, at the Digital Dinner held each year at the Dayton convention. I had read their columns in the RTTY/Digital Journal, and last year I heard Jay speak about their DXpedition to HC8J. They have recently returned from presenting the HC8J story to the members of the Northwest DX Association at their Portland convention. I asked Jay and Betsy if they would share with the readers of Digital Digest some of the experience of operating from an exotic location during a major digital contest.

The Colon archipelago, better known as the Galapagos Islands (HC8 land), is an island group located in the Pacific Ocean 600 miles west of Ecuador (HC land), which claims possession. Its capital is San Cristobal. The archipelago takes its name from the famed Galapago turtles, large land creatures that populate the islands.

DD: What prompted your initial trip to the Galapagos?

JT: Ted Jarmillo, HC5K, invited us to visit him in 1987. It was during this time that the RTTY/Digital Journal and CQ magazine announced the first CQ World-Wide (CQWW) RTTY contest, further sparking our interest. From the time I was fourteen I had been reading about other DXpeditions, and I wanted to operate from a rare location.

DD: Why the Galapagos Islands rather than, say, ZD8 land?

JT: Ted claimed the islands were one of the greatest contest sites in the world. The scientific appeal of the Galapagos also held a fascination for Betsy and me. We both speak Spanish fairly well, so it seemed like a natural destination.

DD: Were there any restrictions placed on your DXpedition? How did you travel to the islands?

BT: Access to the islands is very restricted. The government of Ecuador controls the number of people entering the islands and how they get there. We took a SAN Airlines 727 jet from Ecuador that flies to the capitol, San Cristobal. Boats also stop at the islands, but only with permission and when it is granted, their time is carefully controlled.

DD: What modes did you operate?

JT: On the first trip we used all modes—SSB, CW, RTTY, and AMTOR, including 6 meter SSB and Oscar satellite. But our primary operating modes have always been digital. We tried all of them except packet. We just didn't give much thought to packet since most of the operation was going to be on RTTY.

DD: From whom did you obtain permission to operate and whose station did you use?

JT: Ted had an idea to create one of the foremost amateur radio sites in the world. He formed an organization called the Association of DX-EX. This group, of which Betsy and I are founding members, established the HC8J station in 1987 and have maintained it ever since. Permission to operate in Ecuador is obtained under the umbrella of a radio club's license, and Ted has been the main instrument in acquiring our tickets every time we visit Ecuador or the Galapagos. To date I have operated as HC8CQ, HD8EX, HC5J, and HC8J.

DD: Aren't HC8CQ and HC8EX the same station?

JT: They are one and the same, used by us in March 1993 and by Rich, HC8A. Antennas have evolved in six years from 20 foot lengths of water pipe to the present setup that uses three 80 foot towers.

DD: From that beginning, how many trips have you made and how did Ted's idea develop?

JT: In 1987 a group of us traveled to the Galapagos and activated HD8CQ during the first CQWW contest. We spent about 10 days erecting antennas, building a ground system, and creating the basic station. It is presently located in the center part of an island about 1100 feet above sea level with a near perfect horizon over salt water. The task resembled a lengthy field day. Close relationships were formed while working deep in red mud, drinking scotch in the evening, and chasing DX when time permitted. The memory of it will last a lifetime.

DD: How often since then have you visited the islands?

JT: Several times. We returned in 1989 and operated the contest as HD8EX. We won the multi-single category, setting a world record that remained until last year. In 1990 we traveled to Ted's house and I operated HC5J during the CQWW RTTY contest, once again winning and also establishing the all-time record for single operator. We again traveled to the Galapagos in March this year since we were told the weather was much nicer than it was during the September contest. This trip I operated HC8J as a single operator in the BARTG (British) RTTY contest. The station set an all-time record by making 1,157 QSOs. This effort eclipsed the previous HC5J record set in the contest by a single operator. The operation also yielded an all-time BARTG contest record of 1,667,000 total points.

DD: What kind of equipment did you use on the first trip when you operated all modes?

JT: The Icom 751 transceivers that we brought from Washington state have been used on every trip. We also used Drake L4 and L7 amplifiers that run about 600 watts. For RTTY operation we used the AEA PK-232, except for the first trip when we had a hodgepodge of equipment. We have made extensive use of ScotchLog software for RTTY contesting as well as maintaining a log of CW and SSB contacts. We also have a fine collection of Yagi antennas donated by Cushcraft for the first trip. The present antenna farm has grown to include monobanders for 40 through 10 meters, plus various satellite antennas. The site also has some residual antennas from the 1987 N6AA SSB multi-multi contest effort.

DD: How do you get around the island?

BT: There are two means to travel; by truck or by foot. On San Cristobal you cannot rent a car so getting around is a treat. We walk everywhere in the port and ride to the site in the truck. When we first visited there was only one truck on the entire island, but now there are several.

DD: What was your main non-radio activity?

BT: That's difficult to say since almost everything we do is radio-related. The animals are the main attraction. To see them is often difficult since you must first hire a boat to take you around the islands. Each island specializes in different animals, but Espanola Island has a wide variety of birds and brilliant marine iguanas. I took the photo of the bird on the HC8J QSL card on Espana. So far we have mailed nearly a thousand of them.

There are many interesting things to see and do near El Junco, which is an extinct volcano. I prefer doing a lot of walking. Some of the trees are poisonous so it's important to stay on the road. The lake inside the crater of El Junco is home to many aquatic birds, especially the large frigates with their eight-foot wingspan. Closer to home are the Darwin finches and owls. The owls go after the mice that years ago stowed away on incoming ships. Like the other animals and birds, they show no fear of people.

One night Jay was treated to a close encounter with a large barn owl that flew into our window while Jay was in a QSO. You can imagine the bedlam. The poor bird didn't understand Jay's concern. Our friend Guido soothed the owl in a very practiced manner, finally carrying him to a window where he made his escape into the night. It was very impressive. I've never thought of handling a bird of prey that way, and suspect I never will.

JT: That story is a little tamer than the one she told to you in Dayton. I was terrified and began screaming, the owl was huge and the eyes were the brightest thing I had seen all day!

DD: How did you find the social scene and the other visitors?

BT: About 99.9% of the tourists immediately embark on large cruise ships, so you only see them at the airport. In 1987 we were the only tourists. By 1989 we spotted some folks from New England, easily recognized wearing their New York Jets jackets with white leather tennis shoes. During our last trip we encountered Europeans. There are a few hotels in Puerto Baquierzo Moreno, but they are primitive. This year we noticed a few more tourist restaurants and some limited shopping for t-shirts and other souvenirs. The best buys for Galapagos items are found on the mainland in Guayaquil and Quito.

DD: How was the food? Did you sample the galapagos turtle soup?

BT: No! And you can end up in jail for killing a plant on the islands. Turtle soup is definitely not something I care about. We have eaten some rather exotic food though, such as tripe and mackerel soup, which is very oily. Jay says it's good for the hair and it helps keep the chiggers away. Usually our friends cook for us or hire someone to do it. We eat the local fare. Breakfast consists of soft cheese, bread, and coffee. Lunch was often a large bowl of beef or fish soup with rice and a fish or beef entree. Dinner is similar to lunch. We drink bottled water or beer with our meals. The food is plentiful and very tasty.

JT: The most important food is Muerte Roja or Red Death, a hot sauce that tastes good on everything. I even adopted it as a nickname when I discovered I could break SSB pileups by saying, "This is Muerte Roja—-break."

DD: Is there music on the islands, aside from CW?

BT: There is no music other than commercial FM radio from the mainland.

DD: Who did most of the operating on the various modes?

JT: During the first two trips we shared operating time, with Betsy running 6 meters for hours at a time. I did a lot of late-night SSB, with some CW on 80 meters. Betsy preferred 10 meters. The first two RTTY contests we operated as a multi-single station so time was shared. During the March BARTG I did all the RTTY operating while Betsy ran the Europeans on SSB during daylight hours.

DD: What was your prime source of power and what is the power source for the islands?

JT: We provided our own diesel generator, but there are power mains available that supply about 180 volts most of the day. The islands power is diesel-generated.

DD: If you return, what would you take with you or do differently?

JT: More duty-free Scotch. Actually, I think a lap top computer would be high on the priority list.

DD: What is your chief complaint about the trip? And the best part?

JT: On the last trip we had terrible airline service, which is our only complaint. The best part is the wonderful people we met.

DD: Do you plan to return?

JT: The lure of the Galapagos attracts people on a regular basis. I would love to return and stay a month, but the vacation time is hard to find. Personally, it's hard not to include a contest in any travel plans, since contesting is in my blood. But the Galapagos Islands are indeed one of the wonders of the world, so we hope to return.

(cont'd on page 10)

The Oak Hills QRP wattmeter

The most fundamental piece of accessory gear in any QRP station is the wattmeter. Not essential, mind you, but low power is the touchstone of our existence, so why not measure just how low you can go? Lots of QRP operators use meters designed for QRO operation-straining to see minute movements as the milliwatts fly through the feedline.

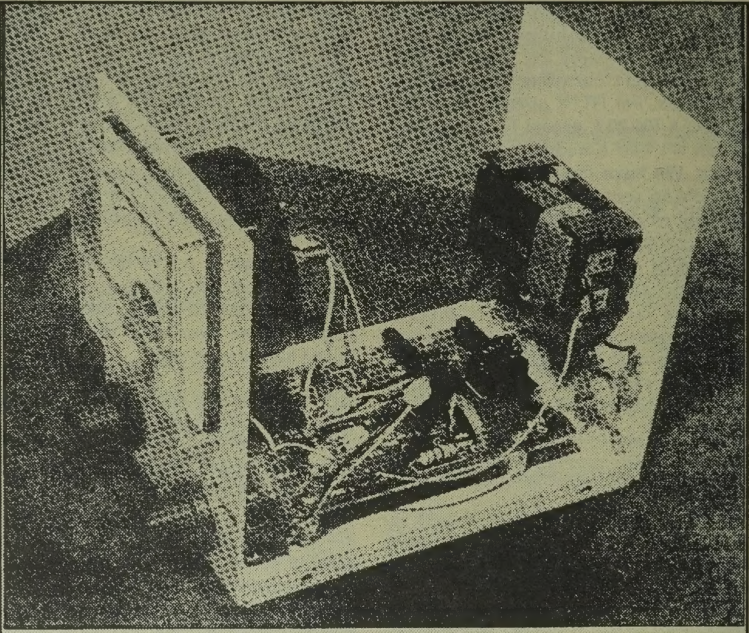
If you've ever craved a wattmeter designed solely with QRP in mind, though, take a look at Oak Hills Research's WM-1. It's a reasonably new addition to the Big Rapids, Michigan, company's kit line. Its $79.95 price tag may seem a bit much to some, but when considered as a one-time, life-long investment, the WM-1 is worth it.

The meter's three measurement scales tell the QRP story succinctly: 0 to 10 watts, 0 to 1 watt and 0 to 100 milliwatts. QRO levels need not apply. The WM-1 can also measure reflected power, making it a full service output power and SWR metering device.

In practical use I've found the WM-1 quite useful in achieving a superb match when used with an antenna tuning unit. Here's how: Firing up the "spider" transceiver, the WM-1 is set for reading forward power on the O-10W range. Keying down, the meter kicks up nicely to a reading of slightly below 1W output.

Switching the WM-1 to read reflected power, the transmatch is tweaked for the lowest meter reading. Keeping the WM-1 set for reading reflected power, now shift to the 0-1W range. Again, tweak the transmatch for lowest meter reading on the WM-1.

Still reading reflected power, shift to the O-100mW range and tweak the transmatch for lowest meter reading. The meter shows only nanowatts of reflected power—virtually a one-to-one match. That reading is not discernible on the 0-10 or 0-1W ranges.



Inside the Oak Hills Research WM-1 QRP wattmeter.

During routine operation, I generally leave the WM-1 in the O-100mW range, reading reflected power. Knowing I've got a good antenna match is more important to me than seeing the meter kicking up to about a watt on a forward power reading. It's amazing how much environmental conditions along the antenna—moisture and wind movement, for example—can affect the match.

Oak Hills touts the WM-1 as being "great for portable use." I suppose an argument can be made for that, but its high-profile design would make it awkward for backpacking. The cabinet measures 41/2 inches high, 3 l/2 inches wide and five inches deep. The large panel meter makes the WM-1 very nice for fixed station use. But it sure takes up a lot of real estate when considering taking a wattmeter on a trip into the wild.

The electronic design is clean and simple. Two chips—a CA3160E and LM358N—make up the heart of the power sensing circuitry. The SWR bridge consists of the requisite toroids, which come pre-wound, a couple of diodes and a handful of resistors and capacitors. The WM-i is powered by a cabinet-mounted 9V battery, which I suspect will last a long, long time. Current drain is typically 1.2mA—not much. No exotic tools are needed for assembly. Adjustment and alignment are made with a digital voltmeter. I used a garden variety, shirt pocketsized Radio Shack model. The procedure takes only minutes.

I would not recommend this kit for first-time builders. The PC board traces are somewhat difficult to see, as they are "hidden" in a forest green background. With such a backdrop, I found it a little tricky to assure that there were no solder bridges after I'd finished putting in the board-mounted parts. There are also two short lengths of RG58 coax which need to be carefully trimmed and dressed for the SWR bridge. While the process is relatively simple, it's not one I'd suggest for someone who has never used a soldering iron before.

(cont'd on page 14)

INDEX LABORATORIES presents...

QRP PLUS

- **5 Watts CW & SSB 160M thru 10M**
- **SCAF Digital Audio Filters (100Hz to 2400Hz Variable Bandwidth)**
- **Compact, Truly Portable, Low Power Drain (.14A @ 12V on Receive)**
- **20 Memories, SPLIT, RIT**
- **Full Break In**

Now the features and performance you would expect in a full size rig are yours at half the size, half the price, and a tenth the power drain. Serious QRP operation demands more from a receiver, not less. You get the ability to sort out weak signals amid high power QRM; freedom from overload and precise filters. All bands, yet truly portable (5-1/2"W x 4" H x 6" D). The transceiver is compact and rugged, and its low power drain means a weekend of use on a small battery.

A unique single conversion up-converting design provides exceptional receiver performance with a significant reduction in size, cost and power consumption.

The QRP PLUS incorporates SCAF variable bandwidth digital filters. Adjust from 100Hz to 2400Hz bandwidth to slice out QRM simply and cleanly. The digital filters are remarkably sharp and free from ringing.

MEM The QRP PLUS has 20 memories. Press and hold the MEM button and turn the main tuning knob to move from memory to memory.

FAST Press and hold the FAST button to tune quickly across the band.

STORE Press the FAST and MEM buttons simultaneously to store the current frequency in memory.

NORM <-20 DB> Use the input attenuator with very strong signals or high band noise.

BANDWIDTH Press and hold the BANDWIDTH button. The bandwidth will be displayed. Turn the main tuning knob to vary the bandwidth from 100Hz to 2400Hz.

XCVE/RIT/SPLIT In the XCVE position the QRP PLUS receives and transmits on the same frequency. Switch to RIT and the transmit frequency remains fixed while the receive frequency can be varied.

REV Working Split: The DX station is listening up 5KHz.
1. Tune in the DX station with the switch in the XCVE position. 2. Switch to SPLIT. 3. Press and hold the REV button while tuning to listen for stations calling the DX. 4. When you have found the DX station's listening frequency, release the REV button and call. You will be transmitting on his listening frequency and listening on his transmitting frequency.

The QRP PLUS requires 12VDC at 1 Amp. on transmit and 140 MA on receive. A well regulated AC supply or Gell Cell rechargeable batteries are suitable.

Separate connectors and an internal jumper allow the QRP PLUS to be conveniently interfaced with VHF/UHF transverters and external linear amplifiers.

For more information - call or write to
INDEX LABORATORIES • 19913 48th Street • Longbranch, WA 98351
(206) 884-3855

DIGITAL TV & IMAGING

by Mike Stone, WB0QCD

1492 Hwy 30 • Clarence, IA 52216

WHOOPS - SORRY!

My apologies for missing the July/August issue of DD. Mis-communications, I plead guity. I thought our hero Tom WA8DXD, had plenty of enough material from me lying around his office/shack. Apparently I was wrong. I wrote quite a lengthy piece about cameras that must not have made it to Florida during both our address changes. I'll re-do it for a future issue.

FSTV NEWS

There is not a lot of news in the Fast Scan TV industry of late. There were not a lot of high-altitude balloon launches this summer as compared to the past two years. It's quite natural for the enthusiasm to dwindle down on its own after awhile. So many of us here in the midwest, have enjoyed hours of thrilling balloon launch and flight moments thanks to Bill Brown WB8ELK and all the various flight support crews. An October 23rd and/or 24th PACIFICON Convention launch should have been completed by the time you read this column. ATV pictures from near space were scheduled to be transmitted from up to 100,000 feet on 434.0 MHz with 2 Meter voice coordination being done on 144.340 MHz. The chosen low-end, two meter FM frequency, must really be smarting for some of the long time 146.43 rock bound crowd in Southern Cal. I believe the use of .34 was a first, and hopefully it will not the last use of it there. 144.340 MHz FM has become well-known as the standard FSTV "talk" channel throughout most of the country, something I fought long and hard to establish years ago.

HAM MAGAZINE BITES THE DUST...

Did you hear? My ole' pal Henry Ruh KB9FO, lost his regular ATV Column in the old RADIOSCAN (now defunct Amateur Communications Magazine) publication. What a pity. He is always so entertaining with his illusions of grandeur. Truly, the Lord does work in mysterious ways...

The AMATEUR TV TODAY! Newsletter (a 12-16 page monthly periodical for ATVers) just completed one-year of regular, on-time, mailing service to a steadily growing readership of about 450. It is mailed FREE to registered, bonefied, legit FSTV clubs (contract required) and Industry VIPs - $18.50 per year to everyone else in the USA. Being mailed so often compared to other ATV periodicals, means that ATVT reaches ATVers 2.5 times more often in a year. The FREE mailings, is something that no one else is doing in the Ham Radio Hobby and advertisers are reporting good consumer responses to the brave policy. "Pass around distribution" is increased greatly. The newsletter recently added SSTV & FAX coverage in addition to the FSTV mode. Want to see a copy? Sample issues are just $2.75 postpaid. Write to me and I'll see that you get a copy. Sign-up for a year and I'll get you 3 back issues at no extra charge!

CQ ATV ESPANOL?

The small but mighty South American country of Chile is about to get investigated for HAM-TV activity (if there is any?). My XYL Rose KA0SUT and I left October 4th for a month long trip to re-visit the Andes & Copper rich coastline. We are scheduled to meet with the RADIO FEDERACION CLUB DE CHILE in Santiago to demonstrate our favorite part of the hobby and to see what is or is not happening in video modes. There are a number of SSTV Chileans active and on-the-air that we have worked from the states but we know of no Fast Scanners. Wouldn't it be great to plant a seed here and there and then sit back & watch the interest blossom?

FAIR RADIO SALES in Lima, Ohio has received another big batch of surplus AM-6155 UHF Amplifiers. These were real popular a few years ago as ATVers discovered that the UHF models handled wideband TV video pretty well at 50 watts of power. Contact them or Gerald Cromer K4NHN in Cayce, SC for details. Some models need conversion, others do not.

The BLUE RIDGE ATV & DIGITAL SOCIETY in Roanoke, Virginia is in big trouble facing a WARRANT OF INDEBTEDNESS lawsuit filed against them for failure to pay for an ordered and received (a year ago) commercial manufactured SLOT antenna. Out of state paperwork was filed in Roanoke County District Court in early October. The case has yet however, to come to trial. Can it be settled out of court? Let's hope so.

GO VIDEO has receive 4 more patents for their Dual-Deck VCR recording system. AMEX VCR specializes in a Y-FM technique for superb copy duplication.

John Langner's PASOKON SSTV Systems for IBM format PC's got a big boost overseas recently in France and Japan. WB2OSZ product was favorably reviewed in full-color in two electronic magazines. This accomplishment follows a great article in QST run not long ago this year. He is about to release a brand new, lower-price interface circuit unit module for under $95 that receives most of the popular B/W & Color SSTV signals. It is called EXPLORER. Look for an even better improved resolution, high-end marketed product from John on SSTV in 1994 . Need information? Write to: Absolute Value Systems, 115 Stedman Street, Chelmsford, MA 01824-1823. Mention this column please.

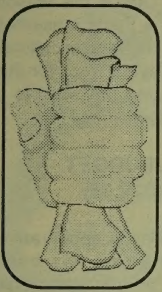
Now I'd like to talk about a project of mine that I have been working to perfection on all this past summer. It doesn't really have a thing to do with Ham Radio except that it is computer related and it can help someone in the retail sales or money management business end of it. It can also help you and your family at home. I will really shorten my comments about it - and give you the jist of it the best that I can in shortened space. If you are interested in what you are about to read, drop me a line and I'll provide you with more information.

TRACKER!

Version 1.0 Release (10/93)
RETAILER and PERSONAL/BUDGET
Spreadheet Templates for Lotus 1-2-3

Ideal For Small Ham Radio Businesses!

EDITOR'S NOTE: The computer software division of QCD Publications, Inc. has developed some brand new spreadsheet templates for LOTUS 1-2-3 (and compatible worksheet) users. They are designed specifically for small retail businesses. One of these templates would be especially handy for Amateur Radio retailers who have a store or who sell products or services from their own home. The products took 3 months to develop from start to finish. They are very reasonably priced and quite affordable to anyone who needs to keep track of sales income, expenses and state sales tax owed. Compared to the complicated and often frustrating written book keeping methods, these new easy to use templates save tremendous labor. TRACKER



requires the use of MS-DOS or Windows 3.0 or 3.1 and any version of LOTUS 1-2-3 (or compatible program). Lotus 1-2-3 version 3.0 or 4.0 for Windows is highly recommended. Presented below, for DD NL readers, is an "edited" portion of the actual manual instruction sheets for TRACKER!.

REGISTERED USERS INSTRUCTIONS

PREFACE COMMENT by designer Mike Stone WB0QCD: The **TRACKER!** family series of LOTUS 1-2-3 spreadsheet templates, came about as the result of several years of time lost and the frustrated attempts at trying to master several other, much more expensive, major accounting program packages. Like you probably have done, I spent hundreds of dollars and just as many valuable hours sitting at the computer, away from my family and the activities that we love the most (Ham Radio!) in my spare time trying to use and fully understand these types of complicated programs. Don't get me wrong, these types of sophisticated programs have their place and I am sure are very much needed for business people who operate much more complex businesses. The small retail business owner, however, needs something less expensive, quicker and easier to learn, and yet still be able to maintain accurate, detailed records of all financial transactions.

Our new **TRACKER! - RETAILER** Lotus 1-2-3 (or program compatible) MONEY MANAGEMENT spreadsheet utility fullfills this desire. **RETAILER** is based on standard accounting procedures. The entire spreadsheet is laid out in an easy to follow format. Semi-hidden formulas have been written in to the spreadsheet to do all the required math calculations for you. Enhanced graphics, graph charts, protected cells and other useful material is included to actually make using this template, FUN and ENJOYABLE!

DESCRIPTION OF RETAILER MONEY MANAGEMENT TEMPLATE

TRACKER! is the generic "family" name title given to our growing series of time-saving file management templates. Note that I refrain from referring to these utilities "as programs". **TRACKER!** templates are not really programs. Technically speaking, **TRACKER!** templates are "active" working spreadsheets that work "within" the LOTUS 1-2-3 mother program framework. Current versions run under 100,000 KB (including graphics) of consumed space per template. Other LOTUS 123 compatible spreadsheet programs like: Quattro-Pro, AS Easy As, Harvard Graphics, Excel, Key, Microsoft Word, Symphony (and others) should be able to load in any of our **TRACKER!** templates. You might have to TRANSLATE this information for correct reading. Consult your spreadsheet manual. A full-working version is also available without all the fancy graphics that works on MS-DOS older versions.

GETTING STARTED - One of the really great features we offer with any of our TRACKER! template software purchases, is that initially, you can operate it fully, with very limited knowledge of how to work the larger LOTUS 1-2-3 program! Most **TRACKER! - RETAILER** first time users, actually input financial record information data within the first few minutes of actual operation. Just follow the following guidelines.

WHAT'S ON THE SPREADSHEET?

INCOME CATEGORIES (Divisions) Up to 12 dual-line, Divisional tracking fields are available. A DIVISION can be a division within a company's operating structure that needs to be tracked separately. A DIVISION can be substituted with an INCOME SALES CATEGORY (books, T-shirts, appliances, rental or customers, etc.). 12 fields is usually enough for most small business applications.

EXPENSE CATEGORIES - These are 33 government Internal Revenue Service (I.R.S.) legally recognized and deductable items and services. Try to

(cont'd on page 10)

TRACKER!

***LOTUS 1-2-3* RETAIL SALES MANAGEMENT TEMPLATE**

Attention Small Business Owner!

Put those heavy, multi-paged, book keeping ledgers back in the closet forever - where they belong! Dread those monthly and quarterly required financial reports no longer. Now figure your income tax at a glance! We've done the spreadsheet design & formula work for you!

*Announcing **TRACKER! Retailer Vers. 1.0*** software from *QCD Publications & Software Development, Inc.!* Compatible with all of the popular *Lotus 1-2-3* (and other compatible) spreadsheet version programs, our customized template handles all of your small business INCOME, EXPENSE and STATE SALES TAX reporting data!

No, you don't have to be an expert using *Lotus 1-2-3*. Start Inputting data immediately! Specially written, semi-hidden formulas, "work for you" *behind the scenes* to add, subtract, multiply & divide all of your entered statistics & to place or copy these figures in to directed report areas. Vital formulation cells are "protected" so you can't do harm to them. 12 income taxable and non-taxable divisions (or sales categories), 33 legal IRS deductable expenses; final income/expense net profit/loss reports; divisional breakdowns; automatic sales tax; bar chart; personal note pad; on-screen calculator & full-size or automatically reduced hardcopy printouts on your printer!

All we need from you, is the name of your company, divisions and state's sales tax percentage rate. Specify type of disk and version of *Lotus 1-2-3* program used. Older versions graphic restrictive.

TRACKER! LOTUS 1-2-3 TEMPLATES
Tracker! -**Retailer** Template $39.95
Business Special: Retailer, Payroll & Count - All 3 for just $69.95!
Tracker! - **Personal/Budget** Template $29.95
Tracker! - **Count** template $29.95
Tracker! - **Payroll** template $29.95
Tracker! - **Trucker** template $39.95
Tracker! - **Farmer** template $39.95

Limited operation, Windows 3.0, 4.0
SHAREWARE "trial" versions
available USA (send disk & $5.00).
MC/VISA Credit Card Orders - 10% Added

QCD Software Development
1492 Highway 30
Clarence, IA 52216-9335

(cont'd from page 9)

categorized your expense receipts in to the selected areas.

SALES TAX COLLECTED - State Sales Tax is tracked in several locations. One line designates what YOU collected from your customers. What you must PAY the state - might be (and usually is) a slightly different amount found elsewhere under: SALES TAX OWED. **RETAILER** is automatically formulated to ADD all the TAXABLE item lines and then it takes that total amount, TIMES the rate of state sales tax.

SUB-TOTALS/REFUNDS/TOTALS -Sub totals of INCOME lines (both non-taxable and taxable) together deduct any returns or refunds made to a customer before a final monthly income tally. Likewise, these same totals, have written formulas to add or subtract data. Note that beginning with the first data that you enter for January - **RETAILER** immediately tracks data all the way across the worksheet in to the 1st, 2nd, 3rd and 4th Quarterly summations and in to the Year To Date (YTD) final tally. With **TRACKER!**, you get an immediate LOOK from start to finish, at how your company is doing!

ON-SCREEN GRAPHIC CHART - Middle, right side of template: If your version of LOTUS 1-2-3 will allow it, and if you have the correct **TRACKER!** template, an on-screen, colorful, "active" GRAPHIC CHART is provided that tracks and displays Quarterly YTD data and YTD Income versus Expense comparisons that are color coded to match the different colors of the quarterly/monthly columns.

INCOME/EXPENSE & PROFIT/LOSS REPORT AREA - At the very bottom of the worksheet, are 3 final total lines that give you THE BOTTOM LINE. Expense totals are deducted from INCOME totals and a NET Profit or Loss is shown. Monthly, Quarterly and YTD summations are presented. In green, at the bottom-end of the work sheet, is the final figure that you have been looking for!

FORMULAS - The working heart of our creation! As you master the LOTUS program itself, you will better appreciate and understand our unique TRACKER! - RETAILER formulated calculations are devised. YOU CAN VIEW ALL THESE COMPUTATIONS WITHIN THE WORKSHEET SCREEN (top of screen) as you move around the cells. Commands like: +C35+C36-C37 or @SUM(G14..G37) and others are located all over the spreadsheet.

LOTUS VERSIONS AVAILABLE

The original design and construction of the TRACKER! template utility was done in the current latest version of LOTUS 1-2-3, Version 4.0 for Windows. The utility has been translated to work in "other" version of the LOTUS 1-2-3 as well. A version of all TRACKER! spreadsheet utilities is available for the following LOTUS programs:

MS-DOS 2.01	(123 and older releases)
MS-DOS 2.3	(123R23 release)
MS-DOS 2.4	(123R24 release)
Windows 3.0	(123W release)
Windows 4.0	(123R4W release)

No graphics are available in 2.01 (just straight text and figures - two color). Enhanced line art and shading graphics with a full-range of colors is displayed in 2.3 or 2.4. Full picture and color graphics are displayed in Windows LOTUS 1-2-3 version 3.0 and 4.0.

SHAREWARE DISTRIBUTION

There are some LIMITED OPERATION shareware version releases of TRACKER!'s RETAILER utility available via a number of shareware software distributors. This offer will start showing up around Christmas time in many mailed catalogs. A shareware version is also available from the author directly. Send a blank formatted, low-density disk and $5.00. Be advised that sharware versions are only available for LOTUS 1-2-3 Version 3.0 and 4.0 Windows driven programs. Not all cells and features function properly requiring full-registration.

CONCLUSION

This spreadsheet has been developed to help the little guy (gal) in business. Being active in the Amateur Radio communications hobby for a number of years and knowing experts that we may be, in talking all around the world, many of us are just plain bad book keepers. Therefore, I'd like to target this utility toward these people in particular. That is the reason why this type of offer is being presented in a number of Ham Radio publications. Even if you may not have a need for this offer, how about passing the word to a Ham friend in business, that might?

PERSONAL/BUDGET Template ($29.95)

There is another, similar in appearance, Lotus 1-2-3 template that has been developed to handle the average, single working person or family. Constructed in 3 colored tiers, INCOME, NON-DEDUCTABLE & I.R.S. DEDUCTABLE data inputs, a monthly budget can be set up that automatically figures itself against actual spent, end of the year comparisons. The Income Report, active 3D color Graph, Auto Backups and Note Areas mentioned earlier, are also present in PERBUD.WK.

"Trial" SHAREWARE versions of these two templates are available only for Lotus 1-2-3 for Windows version 3.0 and 4.0 users (send a disk and $5.00). These versions are as mentioned, limited in operation. You must REGISTER to get full-working reditions.

See AD for other templates.

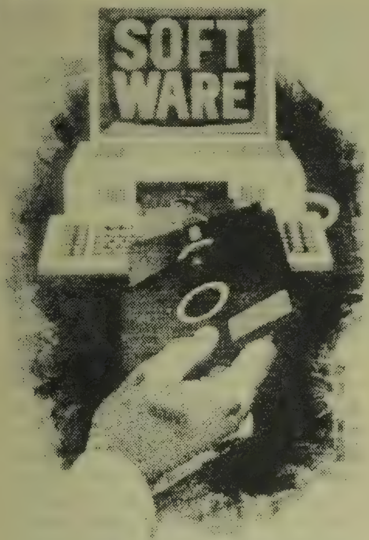
See you in the next issue! Happy Holidays to all DD readers! -WB0QCD

If you have news and information of interest to the digital amateur radio community, please be sure to let us know!

(cont'd from page 5)

DD: In case our readers are interested in visiting HC8J, how should they proceed and what would you recommend to them?

JT: Anyone going to HC8 to operate should contact the ARRL desk for current requirements. We would be happy to answer mail sent by readers of Digital Digest and will offer additional suggestions to anyone writing us at P.O. Box 644 Spokane WA 99210-0644. Hope to see some of your readers on the air.



QEdit

A software review by Wayne Renardson, NZ4W

How do you compose your AMTOR or Packet messages? Do you use a word processor, or text editor? What distinguishes a text editor from a word processor, which also manipulates text, and why should all users of digital communications equipment use a text editor?

I have registered my copy of the venerable text editor, QEdit. As shareware, the owners of the software give me a reasonable amount of time to evaluate their program and since I decided to continue using it, I have an obligation to pay them for their work. If I find the program of little value, there is no need to compensate the authors, since I will not use their product. I have used QEdit to write articles for QST, World Radio, the Journal of Orthopaedic Nursing, Vanderbilt University, and the insightful Digital Digest, which has an audience of truly discriminating readers.

My familiarity with shareware goes back a few years since I formerly reviewed software for The Alternative Software Bulletin, a magazine devoted to informing readers about quality shareware programs. At the time I sought the best software in the shareware market to give the programs the recognition they deserved. As a believer in the shareware marketing concept, which permits trying before buying, I think it advantageous to pay for the shareware I use regularly as it provides the only incentive for clever programmers to continue writing, updating, and improving their product, which ultimately benefits us all. That is why everyone has a vested interest in registering shareware they continue to use.

Text editors evolved from the benevolent hacker's need to write programs in ASCII only, and as such, they are often called ASCII editors. A good hacker could call up his tiny editor, turn out a quick and dirty solution to a programming problem, and immediately return to debugging the source code. Text editors lack the formatting features later found in Word Star, Word Perfect, MS Word, or other WP programs, but they also do not occupy megabytes on your hard drive and they can be transported on a floppy disc. MicroSoft Word for Windows occupies over 7.4 megabytes on my C drive, and if I want to write while away from home, taking it with me is impossible. I also rarely have a desire to deal with this megabyte monster. QEdit fits on one 360 or 720K floppy, with plenty of room to spare for text files. It is the ultimate in portability. Text editors are primarily programmer's tools, and are ideal for creating source code. For non-programmers, they are ideal for nearly everything else.

A word processor was originally a sophisticated text editor that went beyond the humble requirements of a programmer's needs. The ability to format words, sentences, and paragraphs, to deal with charts and graphs, to use headers and footnotes, to number pages and to prepare professional looking documents for publication are some of the features found in most word processors. They are not found in text editors. Word processors evolved as the needs of writers interested in preparing camera-ready copy also grew, eventually containing so many features that the line between desktop publishing (DTP) programs and word processors is increasingly fuzzy.

Text editors are primarily programmer's tools, and are ideal for creating source code. For non-programmers, they are ideal for nearly everything else. Even the least computer-literate among us have to occasionally change our autoexec.bat and config.sys files, and if you use Windows, it is helpful to know how to change and reconfigure the numerous *.INI files required for Windows. A text editor is the perfect program to change the files, since they have no formatting characters to leave strewn around inside the file. EDLIN, the text editor introduced with MS-DOS, was so klugey that many people gave up trying to use it, creating a huge market for a simple text editor. QEdit, with its pop-down menus and user-configured help screen, is one elegant solution to the problem.

Space, both in the form or RAM memory (work space) and disk storage, is an extremely valuable commodity. We have all heard the expression that you can be neither too slim nor too rich. Add to that the maxim that you can never have too much memory and disk space and know that all that is required to run QEdit is the 47K file Q.EXE. Many files in WP programs occupy megabytes of storage, and without even more overlay files you cannot run the program. If space is important, QEdit goes a long way toward reducing the clutter on your hard drive or floppy disc. If being mobile matters, QEdit is, to use Hemingway's phrase, a moveable feast. It travels anywhere on a floppy disc. This sentence is being written on the MS-DOS machine of Roger Frith, N4IBF, to whose home I took QEdit and this file on a 360K floppy.

QEdit can be configured to load into any of your other programs that require an editor. I compose my AMTOR messages in PC PAKRATT II using QEdit, and it is the editor I call when using my file manager, Q-DOS III, another wonderful program.

The main advantage of QEdit is speed. Anyone who has loaded a word processor knows that aside from its bulk, it is also s-l-o-w, taking time to load its fonts, style sheets, its dictionary/thesaurus, and all the other files that are part of the program. QEdit was designed to load quickly (instantaneous on my 386DX/25), to provide fast screen display and updating, to quickly move through the editing window(s), to speedily find text, and to save text to disk almost instantly.

(cont'd on page 12)

(cont'd from page 11)

QEdit is flexible. It can be customized to suit the user's needs. Supplied with QEdit are Keyboard Definition files that will emulate other programs. If you know WordStar or WordPerfect commands, you do not have to learn new ones for QEdit. The registered version of QEdit contains configuration files written by Tim Farley for WordPerfect, WordStar, Brief, and IBM's PE II. You can completely reassign commands in QEdit to emulate other text editors or word processors with which you are already familiar. When configuring QEdit, the menu displays General and Advanced options, Colors, Help install, Keys, Printer options, and Tab settings. The color option allows the user to change colors for various editing displays while the Help option permits the user to create their own help screen. The advanced options allow the user to test for the presence of an EGA/VGA card and 101 keyboard, change the cursor size, and to permit split lines in insert mode. As a programmer's tool it also has a "C mode" that uses automatic indentation for C language programming. It also permits loading command line compilers from within the program.

QEdit has many features found on word processors. It has true multi-file editing, permitting up to eight windows to be simultaneously open featuring multiple views of the same file or different files in each window. The number of files is limited only by available memory. Since the loaded files are placed in a "ring", a few keystrokes will place the cursor in any of the available windows. It has ninety-nine scratch buffers for cut-and-paste operations and it supports character, line, and column blocks for copying/moving text within any of the open files. It allows the creation of macros which will execute a series of commands from a single keystroke, and it has word-wrap and paragraph reformatting capabilities. It also permits line drawings (double or single lines) for graphs or charts. Paragraphs can be reformatted with a simple ALT B keystroke.

When writing text, word-wrap and margin settings are available as defaults but they may also be reset on-the-fly or from within the editor with a few keystrokes. There are also toggles for an auto indent mode that allows the user to use the first non-blank character on the line following the cursor as a left margin. Backup files are automatically created unless the user opts to eliminate duplicate *.bak file when configuring QEdit. Tabs can also be set using a default and changed while in the editor with a toggle.

Some of its technical features include the ability to shell out to DOS to let the user access DOS commands while remaining in the editor. It allows the user to load multiple files from the command line since it supports wild-card (* & ?) characters. If you are working on several documents simultaneously, they can be loaded instantly with a simple batch file. There is also support for 101 keyboards, 200-column and 100-line screens, plus EGA 43-line and VGA 50-line modes.

There is nothing like creating a macro to record and playback a series of keystrokes that you use often. QEdit will create macros simply by pressing the ALT M key to begin and ALT M again to stop recording. I use macros for my address, my signature, and other items that are part of daily life for a writer. Since QEdit contains an ASCII chart, you can create macros to insert formfeed characters (ASCII 12) for printing, or to perform a variety of tasks that require numerous keystrokes.

How might an active amateur radio operator use QEdit in a single day? I awaken and grab coffee on the way to the shack. I log onto and check several AMTOR/CLOVER MSOs, including W4NPX and K4CJX for messages that I download into a file I name after the day of the week, say WEDNESDAY.LOG. I will note which ones to reply to and if I want to respond to AA4WT, I will open QEdit by telling it to start a new file called AA4WT.LTR and to place WEDNESDAY.LOG into the ring so I can read it in a second window. I will write my reply in the first window, which contains MIKE.LTR. When finished, I will load another file, reply to it, and leave QEdit once everything is finished. I then run the files through ShareSpell to correct misspellings and log back onto the MSO I frequent. I will upload my replies and browse some of the other traffic, read any interesting bulletins, and log off. I might then open another file with a proposed article for Digital Digest, or I might write a letter to a software firm, asking about a new feature or upgrade to a program. I might write a letter to my mother, or compose a document to my representative, whining about some legislation or issue before Congress. When I log onto my favorite land-line BBSs, I use Qedit to write messages, since an ASCII upload will work on any system. Regardless, if it involves communicating with another person in print, QEdit works.

Like word processors, text can be readily manipulated. It can be marked or blocked, copied or moved, and deleted or restored after an accidental delete using the kill buffer. Characters, lines, and columns can all be blocked and any of the above features can be used on the marked block. There is also a search feature found in QEdit that will find a word and/or find and replace a word or group of words with a different word. I found this feature useful many times when editing a long document and needed to find a word or, realizing I had consistently misspelled Edmonson as Edmondson, finding and replacing each occurrence of the word with the correct one.

I use AMTOR/CLOVER MSOs K4CJX and W4NPX, primarily to stay in touch with Mike Chalverus, AA4WT. We met through our membership in CFO, a high-speed CW operators group, and when we cannot make our CW sked we use one of the MSOs to leave traffic for one another. If you have spent much time reading the traffic that is passed on any of the HF digital modes, several things quickly become apparent. The first is that operators are composing their traffic without benefit of a text editor. Numerous formatting characters are contained within the transmitted file, usually appearing on the monitor as garbage. Secondly, I have noticed that users do not know how to use a spell checker, and this is something I fail to understand. Nearly every word processor I have used contains a spell checker. It is a relatively simple matter to run your document through the checker prior to transmitting it to avoid polluting the airwaves with illiteracy. Many people use ShareSpell, a shareware spell checker from Acropolis Software that is first-class piece of work available for a mere $20 from Acropolis Software, P.O. Box 5037, Fair Oaks, CA 95628.

The manual that arrives with the registered version of QEdit is excellent. It is clearly written, sensibly organized, neatly indexed, and contains a lot of information to make QEdit even more useful. It rivals anything from a commercial software house.

QEdit has passed through several revisions, winning the Data Base Advisor's Readers Choice award in 1992. SemWare was planning an upgrade but the project became more complicated as users of QEdit requested additional features so they plan to release a more advanced text editor called TSE (The SemWare Editor). It is presently being beta-tested by me and others and a report will be forthcoming. QEdit will run on any MS-DOS computer, including Tandy, NCR, and WYSE PCs, with at least 128K of RAM (QEdit can use up to 640KB if available), DOS 2.0+, one diskette drive, a color or mono monitor with an 80 column display, and 50KB (not 8 MB) of disk space. As shareware, you can try QEdit Advanced version 2.1 prior to purchase. If you find it as attractive and useful as many others have, you can register the program and receive a nicely bound, printed manual, including access to the SemWare BBS 24 hours a day, for $54.95. It is also available as a TSR for $99 while version 1.5 for OS/2 costs $79. SemWare is located at 4343 Shallowford Road, Suite C3A, Marietta, GA 30062-5022 Voice 404-641-9002; FAX 404-640-6213; BBS 404-641-8968 (24 hr/day); On CIS type Go SemWare or 75300,2710.

(cont'd from fron page)

Memory management allows the opening of several programs (windows) at once with the ability to toggle between programs at will.

I have recently taken this ability over to my ham radio operations. Through multitasking, I can now have a dedicated logging program, terminal program, qsl generating program, bearing & distance program and even a word processor all up and operating at once. Sure adds to the efficiency and fun of my operations, and if you haven't tried it yet, you too may want to give multi-tasking a try. You'll probably wonder how you ever got along without it.

Til next issue, 73... Tom / WA8DXD

A Look at On-line Services That Serve Hams

With the increased use of home computers, many hams have purchased modems so they can access information systems over the telephone. Here is a look at some of the commercial services that offer dedicated amateur radio sections.

Prodigy

Prodigy Informational Service has been operational for about four years. It is a joint project of IBM and Sears. Prodigy has grown to be one of the largest services by offering better local number access and low cost. Unlike most services, which charge on a connect-time basis, Prodigy's fixed monthly rate of $14.95 allows unlimited use of their system.

On Prodigy, amateur radio information is in the "Homelife" bulletin board system. Type "Hobbies," then select "Radio Hobbies" to enter the amateur radio section. Once in, you can select from more than 300 amateur radio topics and take part in discussions.

One item not available on Prodigy is downloading of programs. There is no software available in the amateur radio section to acquire. You can leave and pick up messages, catch up on the latest happenings in the ham world, and meet friends from all over the world.

You can select messages by subject and starting date, making it easy to pick up where you left off. Prodigy is good for general discussions and for staying informed, but its lack of downloadable software is a serious limitation.

You use special Prodigy-supplied software to access it—software that is colorful and easy to learn, because it uses a graphic user interface. And the software is available in Macintosh, DOS, and Windows versions. When a software upgrade becomes available, the system automatically downloads it into your computer the next time you connect to Prodigy—so your access software is always current, and the same as everyone else's.

America On-Line

America On-Line is the newest of the commercial services, but its user base is increasing fast. Initial membership in America On-Line is free, and AOL provides the software to access their system.

Software is currently available for Macintosh and DOS. And AOL expects to release a Windows version soon. Like Prodigy, AOL features a graphic user interface, and it works best with the mouse and a hard disk.

AOL has a dedicated ham radio club supported by two sysops, one of whom is ARRL official Luck Hutder, KYIT.

One of the nice things about AOL is downloading of programs and its access to ARRL bulletins. There are several software databases from which to get goodies on AOL. You can get general or program files, packet radio, SWL, bulletins, scanner files, and more. AOL has a good collection of programs that are updated daily. You can leave and receive messages, and lake part in general discussions.

You can get space news and scanner frequencies, as well as hundreds of programs for either Macintosh or DOS/ Windows computers. The cost is $6.00 per hour, on a perminute basis—which is lower than most. Considering the overall access cost and the content, I rate AOL high.

(cont'd on page 18)

(cont'd from page 6)

The parts side of the PC board has each component identified and outlined in a white silhouette, adding to the ease of construction. That makes it a real snap to find where any given part should be placed.

With the exception of one missing solder lug, the kit parts were all there. The instructions are straightforward and clear. I was a little surprised, however, that nowhere is the builder told to mount C5, one of four .01uF monolithic capacitors in the kit. ! suspect it's merely an oversight on the instruction writer's part. In usual Oak Hills style, the builder is given enough information to do a good job of assembly, but there's not so much that it loses its homebrew feel.

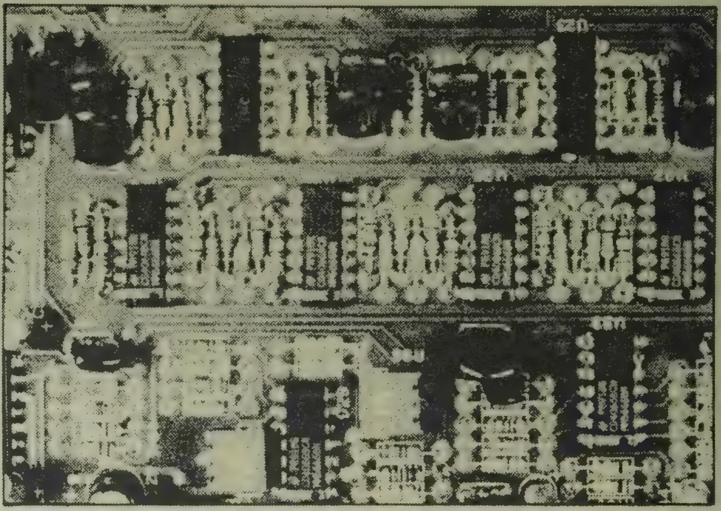
Two rotary switches step the WM-1 through its various functions. The wires connecting them are nicely color coded and are pre-cut by the builder to precise lengths for use inside the cabinet. A large drawing of the wire connections to the switches reduce the chance of error. Drawings of the PC board parts placement in the construction manual also take the guesswork out of the project.

The cabinet is first class. Lettering is crisp and clean on a cream-colored background. The unit's top cover is flat black. The WM-1 would look good in a crowd of commercially-produced gear. The WM-1 — designed by and for QRPers—is going to be a nice addition to a lot of QRP radio shacks.

—by Richard Fisher, KI6SN
Worldradio Magazine

5 Band Quads
$289 2 Element Complete
Complete kits, parts and custom building for quads from 40 mtrs. to 440 MHz. Remember, your ideas can become reality.
UPS Shippable.
Lightning Bolt Antennas
RD #2 Rt. 19 - Volant, PA 16156
(412) 530-7396

Taking the plunge:
Selecting a Packet-only or Multi-mode Controller



Good front-end filtering is the key to good performance.

After weeks, months, or years of hearing the dissonant braaaap of packet signals, you've finally decided to join the fun of exchanging digitally-encoded messages across the street or around the world using a computer. You already have most of the equipment you need: a modern HF, VHF or UHF transceiver, an antenna, a terminal communications (modem) program, and a desktop or laptop computer. All you need now is the little box that will convert those unintelligible radio signals into readable text that shows up on your computer screen.

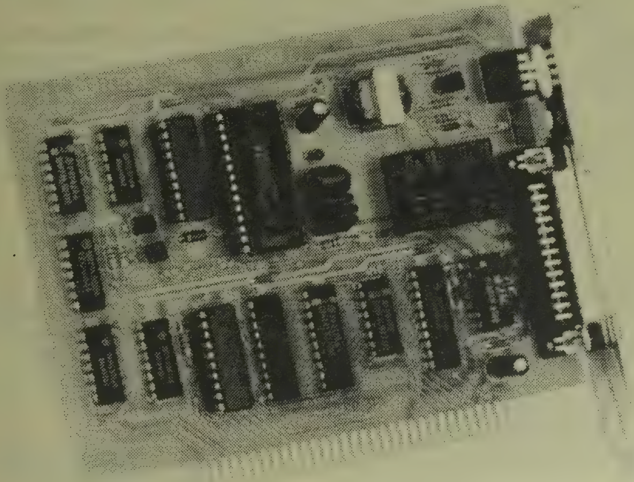
This little TNC is called a controller, or "TNC" (terminal node controller). Choosing the right TNC is no small issue: it can make the difference between delighting in an enjoyable new facet of an old hobby and a one-way trip into frustration and dissatisfaction.

Most packet controllers fall into two categories: packet-only and multi-mode. A packet-only controller is exactly that:

A TNC that's dedicated to operating only in the packet mode. A packet-only TNC is usually limited to the VHF/ UHF spectrum although some can operate on the HF bands, too. A multimode controller, by contrast, operates in a variety of different modes, including packet, Morse, RTTY, Baudot, FAX, PACTOR, AMTOR, SITOR, and NAVTEX. It, therefore, can be used on either HF, VHF, or UHF frequencies.

Two factors usually determine which TNC you'll choose: your station setup and your budget. In general, if you own only a VHF/UHF station, you don't need anything more than a packet-only TNC. If you own an HF station (with or without an accompanying VHF/UHF station), however, you'll do best with a multi-mode TNC. First, you'll get more for your money because you'll be able to use all the modes available. Second, a

(cont'd on page 16)



New Product: The Contest Card

Unified Microsystems introduces the Contest Card, a PC plug-in interface board that contains a voice recorder/keyer and CW interface. This unit allows hams to record their CQs, call signs, contest exchanges, or other voice messages for transmission under control of their computer. Primarily designed for contesters and DXers, the Contest Card can also be used with PC based repeater controllers for ID and special voice messages, as well as for other applications. The board can directly drive an external speaker for non-radio application.

Voice messages are stored in non-volatile memory on the Contest Card, and do not use up computer memory or disk space. The built in CW interface lets your computer send CW on both negatively, and positively keyed transmitters. The Contest Card works with XT (8088), 286, 386, and 486 based PCs.

For radio contesters, the Contest Card is compatible with K8CC's NA(tm) and K1EA's CT(tm) contest logging software. The included disk contains a voice keyer control program and programming information for writing your own software for controlling the Contest Card.

The Contest Card is available in kit form for $119.95 and assembled and tested for $179.95. Shipping $5.00 (US & Canada).
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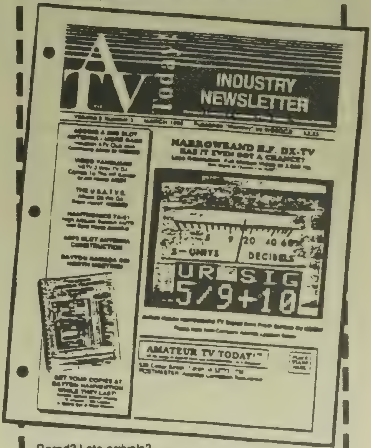

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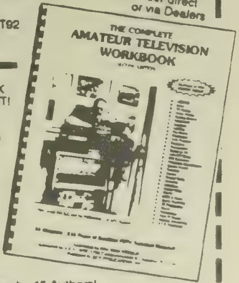

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(cont'd from page 14)

multi-mode TNC will grow with you as your interest in the hobby increases.

Aside from differences in cosmetics and general operating functions, the most important feature to look for in a controller is which type of front-end filter circuitry it uses. The front-end filter's job is to block out unwanted noise and signals from circuits, the atmosphere, and adjacent stations and let only the wanted signal in for decoding. If a filter isn't selective enough to sort the signal from the noise, the controller will be "tone deaf," and you won't be able to carry on a QSO under less than-favorable conditions.

Most dealers won't be too keen on your prying open a controller to determine the type of filter circuitry it has, so you'll have to settle for reading the TNC's schematics or specifications. In the schematic you'll find one of five filter setups: no filter at all, an Exar 2211 chip coupled with an audio bandpass filter, a SCAF, an 8-pole Chebyshev with threshold correction, or DSP.

Any controller without a filter is a total loss from an operational standpoint — don't even consider purchasing such a unit. Skimping on a filter is inexcusable, and without one you're guaranteed to be disappointed with the controller's performance.

The Exar 2211 IC chip was designed for use in telephone modems where noise is minimal. This chip works adequately for VHF radio contacts, but its performance on the noisy HF spectrum is anemic. During periods of selective fading, for example — when a signal's strength drifts in and out with the RF tide — the Exar's PLL (phase locked loop) circuit has no signal to lock onto, so it tries to relock and decode the noise. The result is garbage, or nothing, on your monitor. In addition, the Exar's limiter circuit will be "captured" by adjacent signals that are only a smidgen stronger than the signal you're trying to tune to. To get around this problem, manufacturers add an audio bandpass filter. Unfortunately, this filter's bandpass is a whopping 500Hz wide — so wide that it'll let in all kinds of noise and signals. It is better to steer clear of controllers that have this filter and chip because the combination compromises performance for a lower cost.

The third filter, a SCAF (switched capacitor audio filter) doesn't suffer from the same HF problems as the Exar 2211, but it does generate undesirable circuit noise and possesses a limited dynamic range. A controller with this kind of filter will have difficulty hearing and decoding the signals it's listening to, so there's a good chance you'll get some garbage or poor deciphering performance with this filter. Dynamic range — as defined in the 1993 ARRL Handbook — is "...the decibel difference (or ratio) between the largest tolerable receiver input signal (without causing audible distortion products) and the minimum discernible signal (sensitivity)." A limited dynamic range means that the filter will have trouble with weak signals, which are the norm (and bane) of HF bands. The SCAF also has an undesirably wide bandpass of about 400Hz.

The fourth filter is an 8-pole, Chebyshev filter. Any controller that has this filter is a good buy because it has a bandwidth of only 200Hz, which blocks out a lot of noise and interference. It also has a wider dynamic range than the other filters, ensuring that those weak signals get decoded properly. If you find a unit with this kind of filter, also look for a threshold correction circuit. During periods of selective fading, this will lock onto the signal and decode it long after the other types of filters have given up.

The last "filter" is DSP, or digital signal processing. Unlike the other filters, which are analog, DSPs are completely digital and work on an entirely different filtering scheme. Instead of trying to constantly separate a signal from its surrounding noise, DSPs "sample" what they hear, digitize it, then it "keeps" the digital signal and "throws away" the noise. DSP TNCs are the best you can get and their performance is unsurpassed.

That covers the filter arrangements you'll find in today's TNCs. Now that you're the wiser, you'll know what to look for; you'll avoid advertisers' "hype" and you'll make the right choice with confidence.

73, and Bon Packetit!

—By Stuart Thompson
Worldradio Magazine

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Amateur Radio, past and present

Once in a while television newscasters, during the coverage of a catastrophe like a hurricane or other life threatening situation, mention that "ham operators" are instrumental in rescue missions and the establishment of communication lines at a time when nothing else works. Ham operations have also occasionally been considered "nuisances" when their strange signals show up in someone's television reception and telephone conversations. People then automatically look at the strange large antennas in their neighborhood as suspect, and perceive them to be the point of origin for these "signals." In order to derive a better understanding of ham operators and radio in general, let us step back in time and take a look at the evolution of ham radio and its meaning today.

Ham radio operators are people of different races, religions, gender, education and interests who share one common bond—the desire to exchange personal and technical information between each other locally and afar.

In 1860, Samuel F.B. Morse devised a means to generate electrical impulses on wires and send them over long distances. He came up with an alphabet which, after modifications and adjustment for different languages is still the basis for the Morse code used in long-distance communication of all types.

Having established communication on the various continents via landline Morse code, the next logical need was intercontinental and ship-to-shore communication. James C. Maxwell developed the mathematical basis for what is now known as electromagnetic wave and its propagation.

It was Gugliemo Marconi's contribution in 1901 which looked to long distance propagation and found suitable receiving/transmitting circuits and frequencies and, of course, antennas which allowed these electromagnetic impulses to propagate over vast distances. Macroni's test became famous after he repeatedly sent the letter "S" as a distinct signal across the Atlantic.

The early commercial receiver/transmitter stations were very crude by today's standards and the form of communication was Morse code, not voice operation. There was ample "down time" between the messages and traffic so the radio operators began to use the equipment to "talk" to one another on a friendly basis.

This was the beginning of ham radio. Then logically these individuals would ask how they could obtain similar stations and use them for personal enjoyment. Since the technology was relatively straightforward, it did not take long before individuals began stringing long wires between trees and using stray parts from the commercial stations to set up their own.

During World War I, all Amateur Radio transmissions were forbidden. Following WWI, further development of "radio equipment" continued. Amateur operators were now required to have an operator's license which the government issued (initially to universities or other similar institutions). One of the earliest acknowledgements of a contact I have seen was one my grandfather used at a German university-based station with the call sign. E K4AAL.

In the United States, the Federal Communications Commission is the regulatory body which defines the rules and regulations for radio amateurs. In Germany the Federal Office for Postal Affairs and Telecommunications is responsible for regulating the operators. The Swiss equivalent is the Post Telephone Telegraph (PTT) Office.

In all instances, individuals interested in obtaining ham licenses have to prepare for a test which covers legal aspects of ham operation, operational procedures, technical aspects, and proficiency in Morse code.

In the United States, licenses are divided into five classes, ranging from Novice to Extra Class. The more proficient the individual and the higher the category of license obtained, the more privileges that operator is granted. By international agreement, minimum joint requirements for amateur operation were agreed upon. It is important that different countries use common frequencies and operating modes.

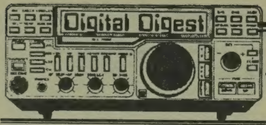
The European community has issued a European license, similar to an international driver's license, which is valid throughout Europe. The individual uses the call sign issued in his or her native country.

Some ham radio operators are quite determined to do the unusual. They will go to remote places to establish what is called a DXpedition. They might select a deserted place such as the South Sandwich Islands. This small group of people travel to the distant site and in a short period of time attempt contact with thousands of other stations throughout the world. The final acknowledgment of the contact, the QSL card, contains the date, time, frequency and mode of the contact as recorded in the logbook. Some operators display these contact records on the walls where the radio equipment is kept—the ham "shack." Our family's ham shack is located in a large area in the basement of our home, and my father and I use it daily.

Observing my father maintain contact with my grandfather in Germany every weekend was one of the many reasons I became an Amateur Radio operator. Contacting many of my father's friends and acquiring a large number of my own friends internationally has been an enjoyable experience. This hobby has even helped me in my school studies, giving me additional insight relative to mathematics, physics, and geography, as well as the various cultures of the individuals with whom I am in contact.

We owe much to those electronics pioneers and dedicated individuals who have taken the technology of radio and enhanced it, making it useful in their daily lives and fun as a hobby. The future of Amateur Radio depends on the way future operators use it, experiment with it and appreciate it; these privileges must not be taken for granted.

--by Christina S. Rohde, N20FY, DJ5LR, HB9HAQ - Worlradio Magazine



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The availability of low-priced high-speed modems, falling long distance rates and more capable basic computer hardware have fueled the information explosion.

More than 13.5 million people currently use bulletin board systems in the United States alone, with more than 10,000 people making their first call to a system every day! There are satellite alternatives, but those are either expensive or not yet interactive.

The potential of new wireless service in the 218 MHz Interactive Video Distribution Service (IVDS) band is revolutionary. Prodigy and Compuserve could use the bandwidth to expand their potential market from more than 2 million to 20 million subscribers within three years.

"IVDS will allow the great unwashed public who don't own a PC, much less a modem, to finally plug into the nationwide E-mail services, Internet and interactive game networks and data base services simply by turning on their living room television and pushing the remote control."

A new "On-Line Media Association" has been formed and an 11-member steering committee appointed.
[Electronic Media, Sept. 6, 1993]

--W5YI Report

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(cont'd from page 13)

Compuserve

Compuserve, the grandaddy of all commercial systems, has the largest user base, but is the most expensive—over $12.00 per hour. But Compuserve has about everything you could want in an information system, including a dedicated amateur radio section, "Hamnet."

Compuserve offers complete upload and download software capability, as well as a messaging system. The software divides information by subject, such as news, scanner, SWL, packet, satellites, and swap, to name a few.

Support from AEA, MFJ, ICOM, Alinco, Drake and other equipment manufacturers is available. Each provides a person for whom you can leave a message about a specific problem, or just an inquiry. It's nice to have a company representative you can deal with one-on-one.

Available programs number in the thousands and go back many years. When something is happening in the ham radio world, you usually see it on Compuserve. Scott Loftesness, W3VS, is the Compuserve ham sysop, and he provides a fine system for the on-line ham.

The only downside is the high cost. Your connect bill can be high if you use the system often.

In General ...

These systems give today's amateur access to information never before available. They offer the latest news and access to thousands of amateur radio shareware programs, from CW training to packet support.

Anyone with a computer and a phone modem can open doors to further enjoyment of our hobby.

But don't forget that hundreds of BBSs around the nation provide support and specific topics on amateur radio—for free. You can get information within minutes on every subject a ham could want. I encourage you to look at some of these services.

—By Kelly Bruce, WD4DAT
from the West Alabama ARS "Beaming South. <ARNS>

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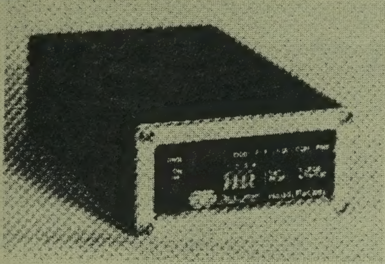

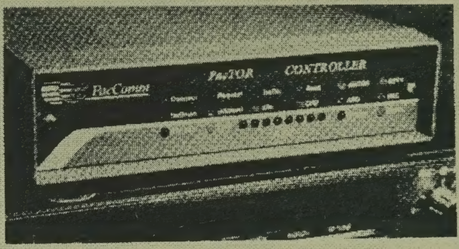

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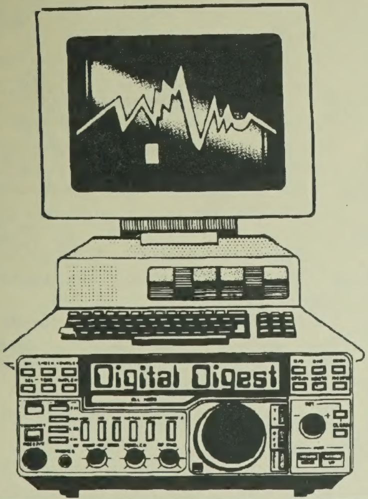

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New RF Exposure Standard Could Impact Ham Radio

The Committee on Man and Radiation (COMAR) is the IEEE Board which sets the U.S. standards on what is considered to be safe RF exposures to humans. The IEEE, of course, is the 300,000 member Institute of Electrical and Electronics Engineers, Inc., with headquarters in Washington, DC. Their United States Activities Board consists of five Councils (Technology, Government, Member, Professional and Career) - each with several working committees. The Chairman of COMAR is Dr. John M. Osepchuk, a research physicist for the Raytheon Company in Lexington, Massachusetts. We contacted Dr. Osepchuk last summer In our capacity as Vice Chairman of the VECs Question Pool Committee.

The FCC has proposed updating the guidelines it uses for evaluating radiofrequency (RF) radiation from FCC-regulated transmitters. According to the National Environmental Policy Act of 1969, the FCC must take environmental effects into consideration when performing its rule making function. The RF safety guidelines were replaced last year with a new more stringent RF safety standard (C95.1-1992) which looks at exposure in different surroundings - under both controlled and uncontrolled conditions. Amateur radio, which was previously excluded from the standards, will now be included if the FCC adopts the latest C95 standard.

Our primary interest was in updating our amateur examination questions which deal with RF exposure to amateur operators and the public who may be in close proximity to amateur radio stations. We pointed out that "Passing a simple multiple-choice examination allows the public (many of whom are youngsters) to operate amateur radio transmitters ...with power levels up to 1.5 kW .... Furthermore, all amateurs are free to construct their own equipment without limitation ...or FCC type acceptance."

We specifically asked a question concerning the HF, VHF and UHF ham bands. The answer to each would be used as guidance for our participation as Vice Chairman of the VECs Question Pool Committee. We wanted to know what is considered the maximum safe effective radiated power (ERP)levels for:

(1) HF operation (3-30 MHz) in a residential neighborhood? What is safe for the operator? For the residents next door? ...and at what distance away from the antenna? (ERP takes antenna gain into consideration.)

(2) VHF operation (30-300 MHz) for mobile, base station and hand held transceivers. We were particularly interested in hand-held radios that are held close to the head, especially those operating in the 11/4 and 2 meter bands.)

(3) UHF operation (300-3000 MHz)...especially 70-cm and 1240 MHz hand held operation.

In short, we wanted to know what is safe for the ham operator and residential neighbors of the ham operator. "What are the power, frequency and distance guidelines?"

We have now received two letters in response to our inquiry. One from Dr. Osepchuk and another from COMAR member, Richard A. Tell- who is also K5UJU. Rick Tell is a nationally known scientist in the field of ionizing radiation. Here is his response:

"This letter responds to your letter of June 11, 1993, requesting information from the IEEE Committee on Man and Radiation relevant to electromagnetic fields produced by amateur radio stations. Your letter contained numerous questions which, because of the very complex nature of the issue, cannot be readily answered. For example, you posed several questions related to maximum safe effective radiated power levels that would insure safe exposures of both the amateur radio operator as well as adjacent neighbors in a residential setting.

"Such a question cannot be answered in a straightforward manner since the resulting RF fields depend upon the frequency of the field, antenna height, lateral distance from the antenna and antenna radiation patterns and, of course, power. In general, then, the assessment of the maximum safe effective radiated power will become a case specific analysis and cannot be answered without details of the particular situation., To help illustrate this difficulty, consider the situation of a directive amateur antenna which is mounted just over the roof of the amateur's home. It is possible that this antenna might be comparable with the upper floors of the next-door home and hence, capable of producing substantial RF field strengths inside the upper floors of the adjacent home. Clearly, an amateur using only 100 watts of output power will be far less likely to cause high RF field levels at the other home but another amateur using the full authorized power of 1,500 watts would result in substantially greater fields.

"To help you place this in perspective, the RF fields near ground from an overhead half-wave dipole antenna fed with 100 watts would reach the most restrictive control level specified in the IEEE standard (an equivalent power density of 0.2 mW/cm2 applicable to uncontrolled environments) with the dipole situated between 2.55 m (8.4') and 5.10 m (16.8') above ground. The range of height is due to the fact that ground reflections will, generally, lead to an elevation of the field strength at certain distances above ground due to phase addition of the field over the simply computed free-space value (no ground reflections assumed). If the dipole input power was 1,500 watts, as permitted by the Federal Communications Commission (FCC) for amateur stations, the antenna would have to be between 9.9 m (32.5') and 19.8 m (64.9') in height. Were the amateur to use a directive antenna with a gain of 10 dBi (a power gain of 10), the free space power density would reach the 0.2 mW/cm2 value at 6.31 m (20.7') for 100 watts input and at 24.4 m (80.1') for 1,500 watts input. Hence, you can see the difficulty in making general statements as to safe distances for amateur facilities because of the wide range of factors involved.

"Attached to this letter is a chart that has been prepared showing the IEEE: standard maximum permissible exposure (MPE) values for each of the various amateur bands. Detailed calculations were carried out for the actual range of frequencies of each band and the more restrictive MPE applicable to each band is shown. It may be of interest to you to know that the FCC is presently seeking public comment on their proposal to amend the FCC regulations regarding environmental processing of license applications by adopting use of the new IEEE standard (IEEE C95.1-1991). One issue that the FCC has identified as particularly important is whether certain types of RF sources that have been categorically excluded from their environmental processing rules in the past, which include amateur radio stations, should continue to be excluded. This is not a issue since the new IEEE standard is, at least in certain frequency ranges, considerably more stringent than the older ANSI C95.1-1982 standard presently used by the FCC.

"With respect to the use of hand-held amateur radio transmitters, the IEEE standard indicates that in a controlled environment (i.e., with an aware user), the unit may employ powers up to 7 watts up to a frequency of 450 MHz without showing compliance with the specific field strength limits of the standard. At 1,240 MHz, the unit's power must be limited to 2.54 watts for the aware user. If the hand-held unit power exceeds these values, then the RF fields, or resulting specific absorption rates, must be evaluated to show compliance with the MPEs established in the standard-i.e. specifically the SAR limits (specific absorption rate).

"In reviewing the sample questions you submitted, we would suggest that in Question T4D11 [Technician Class question pool], now that the American National Standards (ANSI) has endorsed the IEEE standard as an ANSI standard also, the question be revised to reflect this difference, i.e. both the ANSI and IEEE have published safety guidelines for the maximum limits of RF energy near the human body.

"Also in question T4D15, because of the new frequency dependence of the low power exclusion section of the ANSI/IEEE standard, the question should be revised to reflect the power of VHF radios only, not both VHF and UHF.

"Finally, we offer for your consideration two possible questions that might be determined to be useful in the question pools used by volunteer examiners:

"(1) What have most scientific studies shown that biological effects of RF fields determined at different frequencies used by most amateur radio operators are correlated with? [ANSWER C]

(A) RF field strength (V/m)
(B) RF power density (mW/cm2)
(C) Specific absorption rate (W/kg)
(D) Percentage modulation

"(2) To avoid excessively high human exposure to RF fields, how should amateur antennas generally be mounted? [ANSWER B]

(A) with a high current point near ground.
(B) as high and away from accessible areas as possible
(C) on a non-metallic mast
(D) with the elements in a horizontal polarization

"I hope that this information is helpful in your work to develop updated information in the testing of amateur radio operator applicants. If COMAR can be of further assistance, please let us know.

Respectfully yours,
Richard A. Tell, K5UJU,
Member IEEE Committee on Man and Radiation.
--W5YI Report